*Integrity - Service - Excellence*

# C2 Summit Industry Panel - Progress to Date

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Thomas S. Moorman, Jr.

Booz | Allen | Hamilton

Panel Chairman

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# Agenda

- Background
- Challenges
- Recommendations
- Suggested Approaches to Implementation
- Summary

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# Industry Panel Objective

**Provide recommendations on how to improve the Air Force's C2 Enterprise to meet the Air Force's Immediate Needs - GSTF (and Homeland Security)***

- Improve Air Force C2 Architectures, Technologies and Infrastructure (Sub Panel 1)
- Provide C2 Industry View Of How The C2 Government Should Change (Sub Panel 2)
- Foster C2 Government & Industry Partnerships (Sub Panel 3)
- Assess What C2 Industry should Be Doing (Sub Panel 4)

***Added after 9/11/01**

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# Contributors

## Panel 1 - C2 Architectures, Technologies and Infrastructure

| | |
|---|---|
| Carl G. O'Berry | The Boeing Company |
| Steve James | EMC |
| George Perkins | Northrop-Grumman |
| John Stewart | General Dynamics |
| Charles Whitechurch | Oracle Service Industries |

## Panel 2 - C2 Industry View Of How The C2 Government Should Change

| | |
|---|---|
| Terry Drabant | Lockheed Martin Mission Sys |
| Dr. Ed Bersoff | BTG |
| Scott Gessay | FGM INC |
| Barry Rhine | Northrop Grumman IT |
| James Grant | ZelTech |
| Paul Cofoni | CSC |
| Bill James | CSC |
| Pat Ryan | CISCO Systems |
| Wayne Fullerton | CISCO Systems |

## Panel 3 - C2 Government & Industry Partnerships

| | |
|---|---|
| Earl Pontius | Titan Systems |
| Scott Hemmig | Avaya |
| Pat Ryan | Cisco |
| Bill James | CSC |
| John Weber | EDS |
| Jim Amodeo | Harris |
| Bill Adams | Northrop-Grumman |
| Charles E. Franklin | Raytheon Electronic Syst |
| Dennis McLain | Sun Microsystems |
| Stu Cranston | Veridian |

## Panel 4 - What C2 Industry Should Be Doing

| | |
|---|---|
| Dr. Don Winter | TRW Systems |
| David Frost | Frost & Associates, Inc |
| Sanjay Puri, | Optimos Inc |
| Patrick Ryan | Cisco Systems |
| Thomas Syster, | SUN Microsystems |
| David Vesely | Veridian Info Solutions |

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# GSTF – Industry's Perception

- **GSTF is an Air Force concept requiring a distributive, encompassing C2 Enterprise**
  - A more efficient kill chain is crucial to combat success
  - Actionable Information is the key
  - Interoperable and rapid information exchange
  - Horizontally integrated machine-to-machine fused C2 and ISR Enterprise that provides lethal joint battlespace capability
  - Stealthy weapons platforms and precision engagement
  - Global C2
  - Multi-purpose airborne platforms, as well as terrestrial and space, C2 nodes
- **DoD system providers and commercial IT companies need to work with new effects-based operations and capability-based planning / processes for GSTF versus "traditional" military requirements**
- **The system of systems nature of GSTF puts a higher premium on interoperability**

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# Homeland Security – Implications and Challenges

- **Homeland Security presents a new order of magnitude of complexity with civil, federal, state, local, military, and industry actors**
  - Interfaces being defined and will face “Joint” issues as never seen before
  - Could be considered the CONUS version of Coalition warfare with many of the same technological barriers to success (redundancies, interoperability, overlapping authorities, need for new business processes, etc.)
  - Encompasses everything from the NCA down to local government “First Responders”
  - Traditional DoD companies currently provide technology across government agencies and can help with understanding and resolving technical challenges and interfaces
- **The Homeland Security imperative will necessitate close Federal, State, and local government / industry cooperation**

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# GSTF versus Homeland Defense (Industry View)

- Global Strike Task Force
  - Away game
  - Centralized
  - Coalition and Joint Warfare
  - Military is prime actor
  - Clear Lines of Authority (e.g. UCP)
  - Offensive (Find, Fix, Target, Track, Engage, & Assess)
  - Expeditionary C2 and Infrastructure
  - Military Targets and Objectives
  - Emphasis on Effects-Based Operations

- Homeland Security
  - Home game
  - Decentralized
  - Interagency Coordination
  - Military is supporting actor (Air Defense exception)
  - Fragmented Responsibilities
  - Defensive (Prepare, Protect, & Respond)
  - Fixed C2 and Infrastructure
  - Non-Military and Military Targets and Objectives
  - Emphasis on Consequence Management

# The Scope of the Homeland Security C2 Challenge

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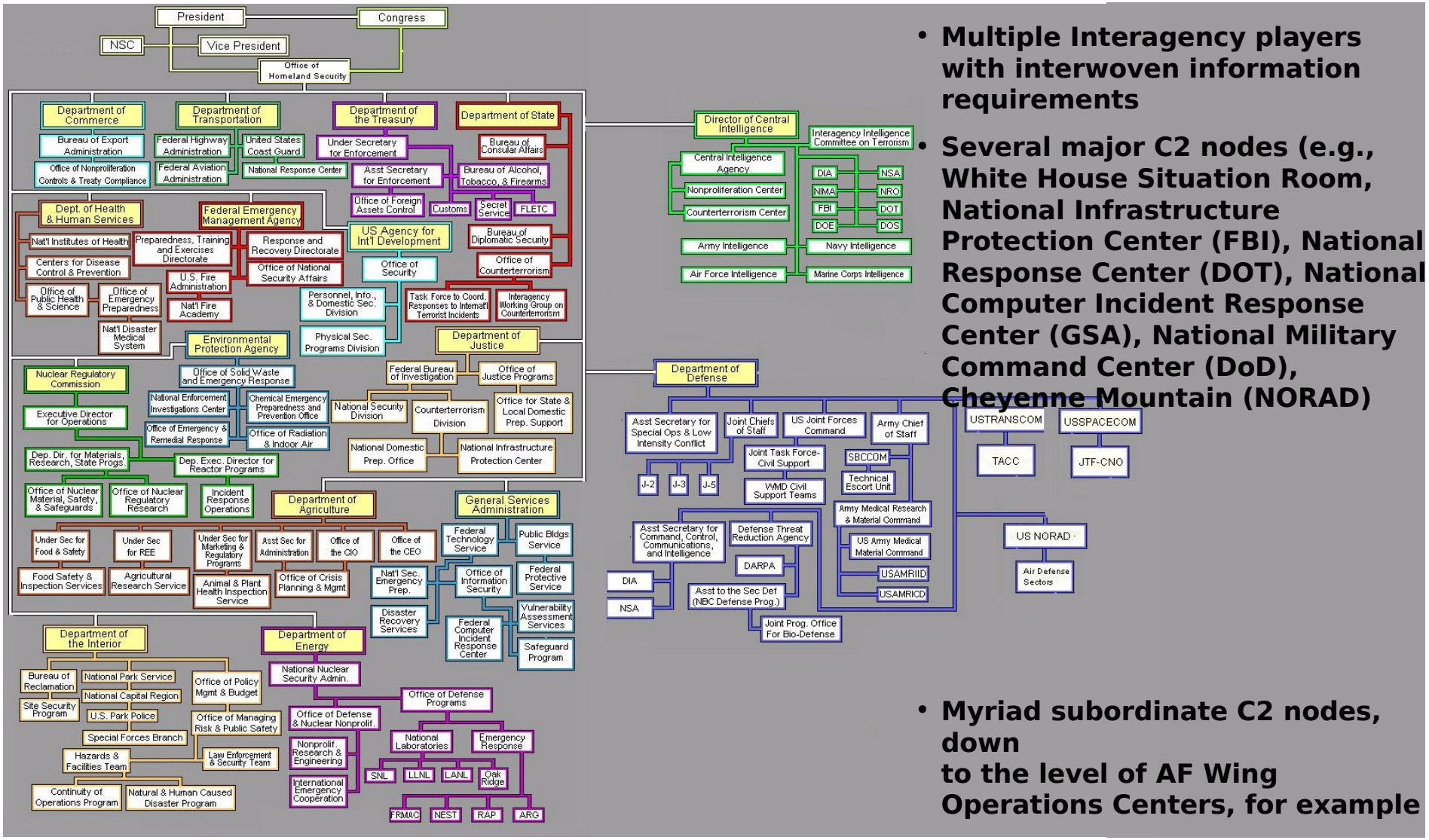


- **Multiple Interagency players with interwoven information requirements**
- **Several major C2 nodes (e.g., White House Situation Room, National Infrastructure Protection Center (FBI), National Response Center (DOT), National Computer Incident Response Center (GSA), National Military Command Center (DoD), Cheyenne Mountain (NORAD)**
- **Myriad subordinate C2 nodes, down to the level of AF Wing Operations Centers, for example**
- **Chart does not depict additional layer of State and local**

# Existing Air Force C2 Structure for CONUS Homeland Security

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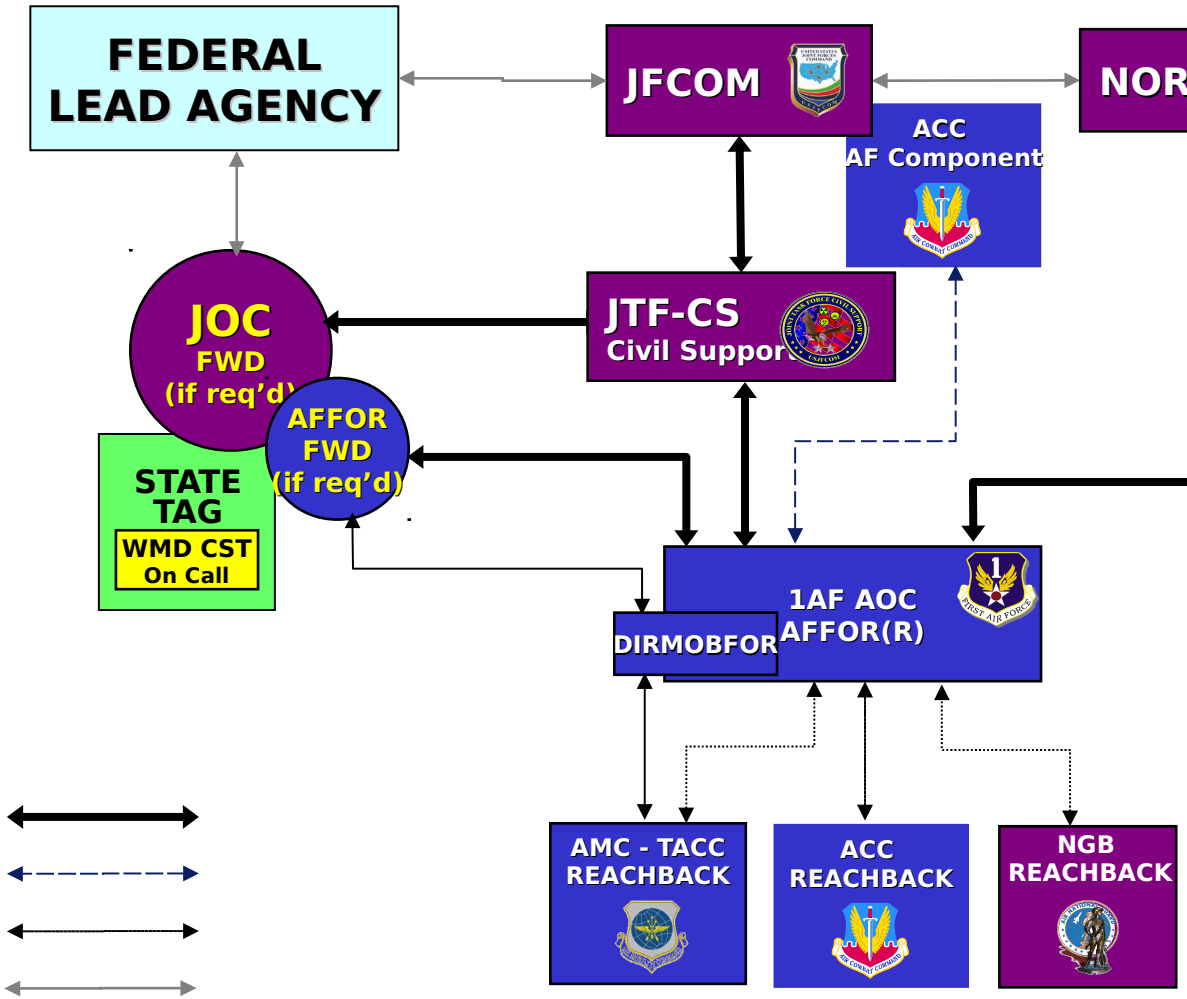


"CONUS as a theater" driving emerging joint and interagency structures and procedures...likely UCP changes forthcoming

Existing 1AF/CONR/NORAD structure provides a good foundation for AF integration into a National Homeland Security C2 framework, however CONUS joint and interagency interoperability will need attention

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# GSTF and Homeland Security – Common Implications and Challenges

- **Industry can help the Air Force and agencies "translate" their new tasking through common technologies, and processes**
- **Organizational innovation and transformation will facilitate C2 Enterprise adaptation to the new missions, including**
  - Industry will have to develop new fully integrated teams composed of companies with different IT skills, including traditional DoD companies and non-DoD IT companies
  - The Air Force and industry can team with new partnership constructs to expedite C2 capabilities to the GSTF and homeland security users
- **Interoperability across a broader spectrum**
- **Both require significant emphasis on information assurance**

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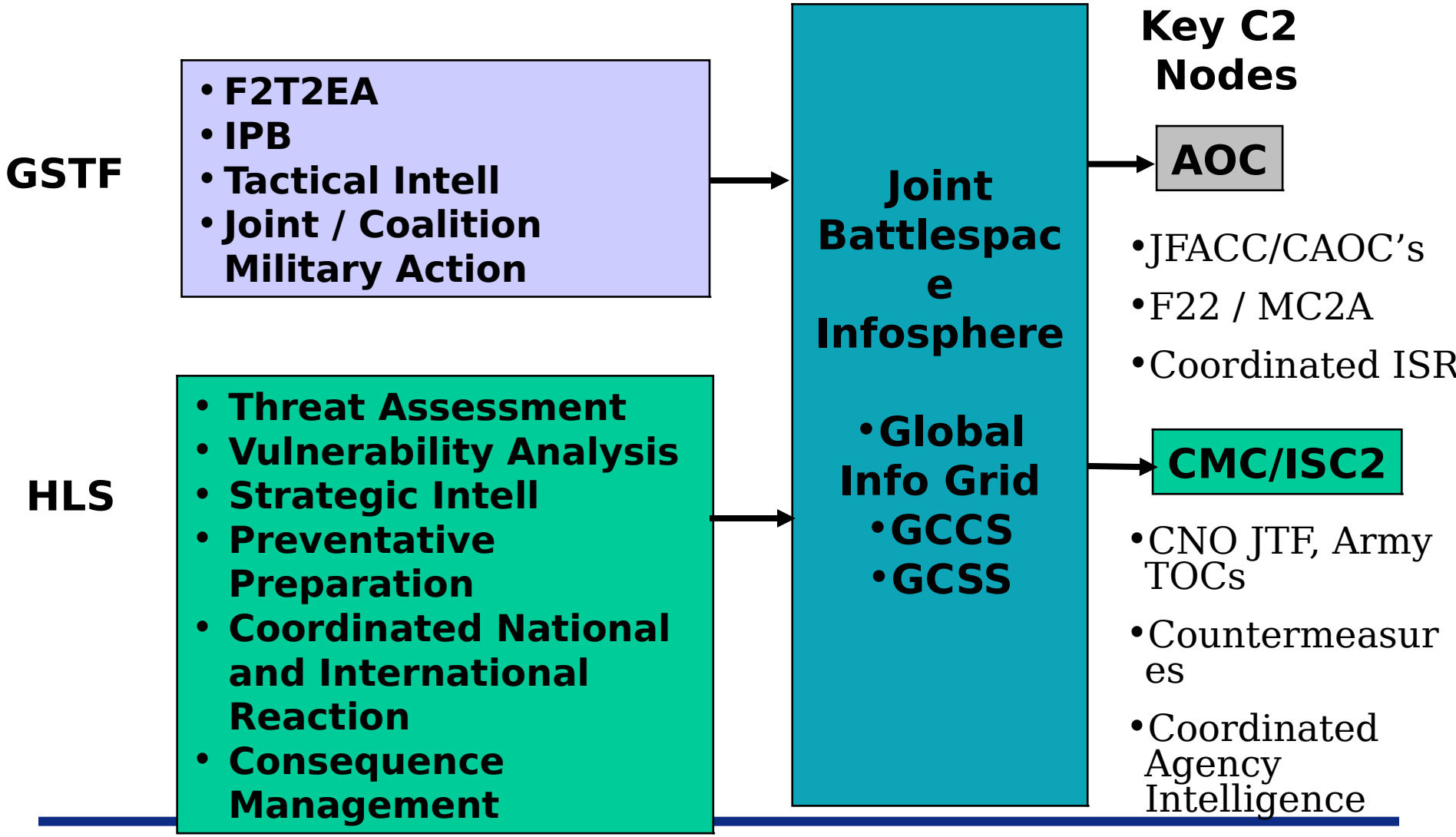
# GSTF and HLS – Their Common Thread: C2



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# AF C2 Enterprise Successes

- Government / Industry Cooperation on AOC Blue Two and C2 Acq. Portal
- AFMC Net Management and PKI Initiatives
- ESC relationship with ACC
- The CAOC-X as a place to demonstrate technology
- Co-location of ESC Program Offices with AC2ISRC and AFSPACECOM
- The Tactical Datalink Roadmap has organized the Link 16 priorities
- Capabilities–based investment strategies

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# Things That Need Attention (Industry View)

- The definition of the “C2 Enterprise” is unclear - e.g., IT vs. C2 vs. C2 & ISR
- Because of their cross-cutting nature, C2 resource decisions need to be capability-based (versus system’s based)
- The Air Force C2 Community is not Industry’s most desirable Customer
  - Monopsony - Only one buyer
  - Generally low margins
  - Expensive requirements are often mandated without negotiation (e.g., COTS-based solutions precluded)
  - The decision-making process is long, complex and uncertain
  - The Government does not have an appreciation of the Time-Value of Money
  - Industry is trading off commercial vs. Air Force opportunities

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# Things That Need Attention

- The Government C2 operational and acquisition communities are often too specific in stating its system or technical requirements (versus its needs)
- The spiral development process often lacks the required participation of developer, operator or tester
- Systemic concerns with the AF C2 acquisition process
  - Driven by requirements vs. customer satisfaction
  - Usually limited to individual program acquisition vice enterprise
  - C2 and ISR systems are often developed in a stove-pipe environment without the benefit of a total Enterprise view
  - The C2 Enterprise is  not integrated - Individual Commands using O&M Funds result in “Stovepipe systems”

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# Observations on On-Going C2 Efforts

- Definition and implementation of an Air Force Wide Enterprise Seat Management System - needs enforcement of C2 Enterprise standards
- C2 Unified Battlespace Environment (CUBE)Process - needed operators and funds
- TBMCS / C2IPS / WCCS – are not integrated
- DII COE not responsive to new technology
- GCCS, GCSS, and Global Grid Interoperability - needs mission constructs and architectures

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# C2 Industry Best Practices

- Partnerships between Providers and Clients
- ROI and Capitalization analysis for C2 decisions
- Adoption and strict adherence to enterprise architectures and standards
- A CIO is the primary decision-maker for enterprise-wide IT implementation
- Implementation of IT solutions – rapid and ruthless
- Use of eBusiness between vendors

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# Top Industry Recommendations for the C2 Enterprise

- **General**
  - Establish an AF-wide definition of the C2 Vision
  - Empower an Air Force C2 single decision-maker for funding, acquisition strategy and architecture/ standards
  - Separate C2 programs from other DODI 5000 system programs to include funding, decision-making and development concepts
  - Industry should participate in the Government C2 Enterprise IPT's
  - Improve spiral development with smart industry partnering
  - The Air Force should recognize and employ evolving global information architecture – convergence on IP, QOS, packet routing
  - Establish an effective communication interface between C2 system contractors and users – consider co-locating C2 acquisition professionals with operators (e.g., SND SPO with USPACECOM)
- **GSTF**
  - Define a single, integrated GSTF C2 architecture with input from industry – GIG provides the foundation
  - Re-engineer C2 processes,e.g., CAOC-X, with technology as an implementation device, not the driver
- **HLS**
  - Determine the specific Air Force C2 structure for HLS, e.g., what is the role of ISC2?
  - Initiate a vulnerability assessment of critical C2 nodes

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# Additional Proposed Recommendations

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## Policies

1. Provide an Integrated Homeland Security C2 Solution
2. Government must develop a realistic & flexible policy encouraging broad use of COTS
3. Investigate increasing AC2ISRC and ESC's fiscal Budget responsibility
4. C2 systems procured with O&M funds should be consistent with C2 Enterprise vision, architectures and standards
5. Contracting and Source Selection
   a. Evaluate other contracting vehicles other than IDIQ or BPA's for procuring C2 because dynamic requirements may have moving baselines
   b. Ensure Past Performance relevancy is "directly" applicable to the procurement
   c. Best Value Considerations need to
      1) Provide Clearer Definitions of Best Value
      2) Incorporate "Enterprise" level assessment
   d. Expand use of Performance Based Contracting

## Processes

1. Review C2 Acquisition Portal & Blue Two for lessons learned. If a follow-on is considered, then:
   a. Use Performance Based Contracting to single provider for the Portal
   b. Use Collaborative team for Blue Two, providing "running" program definition for constant technology updates
2. Down Selects - More definitive guidance up-front
3. Requirements (small r) – How do field user inputs get incorporated and vetted in the spiral development process - Establish mechanism or forum to entertain such requirements - Cut down the decision cycle time for consensus on requirements – usually leads to leadership turnover and change in requirements
4. Contracting vs Customer satisfaction - Establish a meaningful mechanism to allow end user satisfaction into both ESC's and Industry's "Report Card" -Include the C2 acquisition community part of the customer satisfaction surveys
5. Outsourcing - Adopt a commercial business model to maintain and strengthen AF core competencies but outsource all other activities

## Organization

1. Consider the stand up of the Aerospace Battle Management SPO at Langley AFB - ABM SPO would be acquisition agency for AC2ISR Center's C2, Battle Management, AOC Integration, etc

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# Additional Proposed Recommendations – Industry and Joint

## Industry Initiatives

- **Policies:**
  1. Industry should develop business cases that are not solely dependent on Proprietary solutions
- **Processes:**
  1. Developers and providers of C2 hardware and solutions must increase understanding of user needs and CONOPS/TTPs
  2. Defense Industry must act as an effective intermediary with commercial IT - Increased sharing of business practices
  3. Assist in C2 Enterprise Integration – Program Definiton Construct
     a. Industry involvement in completion of architecture
     b. Industry help define the tasks required for integration

## Government & Industry (Joint) Initiatives

- **Policies:**
  1. Industry and government should review the implications of intellectual property laws
  2. Examine education/training programs and acquisition processes to inform the concepts of industry/government partnerships
- **Processes:**
  1. Apply Lessons Learned to C2 Enterprise & GSTF activities – near, mid and long term
- **Organization:**
  1. Institutionalize an Industry C2 Advisory Group with broad, cross-cutting membership
- **Technologies:**
  1. Gov. & industry must jointly & aggressively push for improved interoperability standards

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# Suggested Approaches

| Challenges | Recommendations | Implementation Steps |
|---|---|---|
| **Provide Effective C2 for the GSTF** | ■ Recognize and define a single, integrated GSTF C2 architecture with input from industry – GIG provides the foundation<br>■ Re-engineer C2 processes, e.g. CAOC-X, with technology as an implementation device, not the driver<br>■ Improve spiral development with smart industry partnering | ■ Initiate a Joint Govt / Industry C2 Architecture Group – AC2ISRC Lead<br>■ Perform an AOC Process Review for GSTF – AC2ISRC Lead<br>■ Create an ESC presence at AC2ISRC for GSTF |
| **Supporting the Air Force HLS Mission** | ■ Determine the specific Air Force C2 structure for HLS, e.g. what is the role of ISC2?<br>■ Initiate a vulnerability assessment of critical C2 nodes | ■ Define the HLS Ops Architecture & capability needs – AC2ISRC / AFSPACECOM<br>■ Structure the budget to meet the needs – AC2ISRC, AFSPACECOM and ESC<br>■ Work with Other National Agencies<br>■ Apply AOC lessons learned to the HLS problem |

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# Suggested Approaches - Continued

| Challenges | Recommendations | Implementation Steps |
|---|---|---|
| **Making the AF C2 acquirer a more attractive customer** | ■ Empower an Air Force C2 single decision-maker for funding, acquisition strategy and architecture / standards | ■ Establish a Flag-Level position in the Air Staff<br>■ Recruit and assign a senior Enterprise mgr |
| **Providing the AF what it needs** | ■ The Air Force should recognize and employ evolving global information architecture – convergence on IP, QOS, packet routing | ■ Form a joint industry/military commission to establish AF standards and participate in industry forums |
| | ■ Industry should participate in the Government C2 Enterprise IPT's | ■ Request Association participation on IPT's |
| **Improving the Govt Business Acquisition Processes for the C2 Enterprise** | ■ Establish an effective communication interface between the C2 System contractors and the users – considering co-locating C2 acquisition professionals with operators (e.g., SND SPO with USPACECOM) | ■ Evaluate and eliminate contractual limitations to system contractors |
| | ■ Separate C2 program from other DODI 5000 system programs to include funding, decision-making and development concepts | ■ Consider a Service "MAISARC" process for C2 programs – Draft DODI 5000 series modifications<br>■ Define and categorize C2 Programs |

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# Summary

- **Outreach and collaboration with industry is appreciated and vital**
- **C2 Enterprise is characterized by several successes, but there remain areas that need attention**
- **Industry believes that the C2 Enterprise can be improved through:**
  - A well-defined & communicated C2 vision
  - New government & industry partnerships
  - Institutionalizing a C2 industry advisory group
  - Adopting commercial technical model & standards
  - Being receptive to industry best practices
  - Modified financial and acquisition processes
- **The demands of Homeland Security will require an even closer relationship with industry**

# *Back-up Charts*

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# The Current Industry / Government Environment

- Industry is…
  - Market driven
  - Growth, revenue, profit oriented
  - Composed of vendors, integrators, services, etc
  - Dominated by engineers and bottom line managers not well versed in the Govt's operational environment
  - More stable in its management personnel
  - In better position to counter the government stovepipes through technology transfer
  - Knowledgeable in Fed/Civil programs, acquisition processes, and technologies

- Government is…
  - Capabilities driven
  - Cost and other attributes (i.e. interoperability) oriented
  - Composed of field users and acquisition managers
  - Dominated by users, not well versed in the business environment
  - Subject to high turnover, low corporate memory
  - Often more averse to accepting solutions developed for other users
  - Divided into the DoD and Fed/Civil "camps" and these are often disparate in both intent & legalities

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# Transforming Government and Industry for the Missions of 2010

**Vision**
**Immediacy**
**Commitment**
**Architecture**

- Vision
  - Be driven by the GSTF **needs**
  - As a national imperative ensure the C2 Enterprise is fully protected and responsive for Homeland Defense
- Immediacy
  - military capability for Offense and Defense
  - no more that 24 months into the future
- Commitment
  - To commercial technology, services and capabilities
  - To network centric warfare
- Architecture
  - Recognize and employ evolving global information architecture
  - Convergence on IP, QOS, packet routing

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# The Current Industry / Government Common Environment

- Military, civil, and commercial operations share common requirements
  - 24/7 operations
  - Near real-time information
  - Knowledge of enemy/competitors moves
  - Deliver value irrespective of geography
  - Decision support tools
- The marketplace (military, civil, and commercial) is faced with:
  - Accelerating cycles of technology
  - Rising customer expectations
  - Increasingly competitive environments

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# Challenges and Issues

- Cultural
  - How to achieve a common C2 vision and processes without disassociation from the operational and other system development communities
- Fiscal
  - Giving the C2 development community responsibility for all colors of money
- Political
  - Changing of the C2 Acquisition community's internal relationships and including the entire Space and ISR structure in the C2 Enterprise
- Technical
  - DOD more or less confined to unique, self-imposed technical infrastructure (DII COE – AF)
- Processes
  - The current acquisition process virtually ensures attempts for new technology will be quickly outmoded by faster technology adaptation time in the commercial environment

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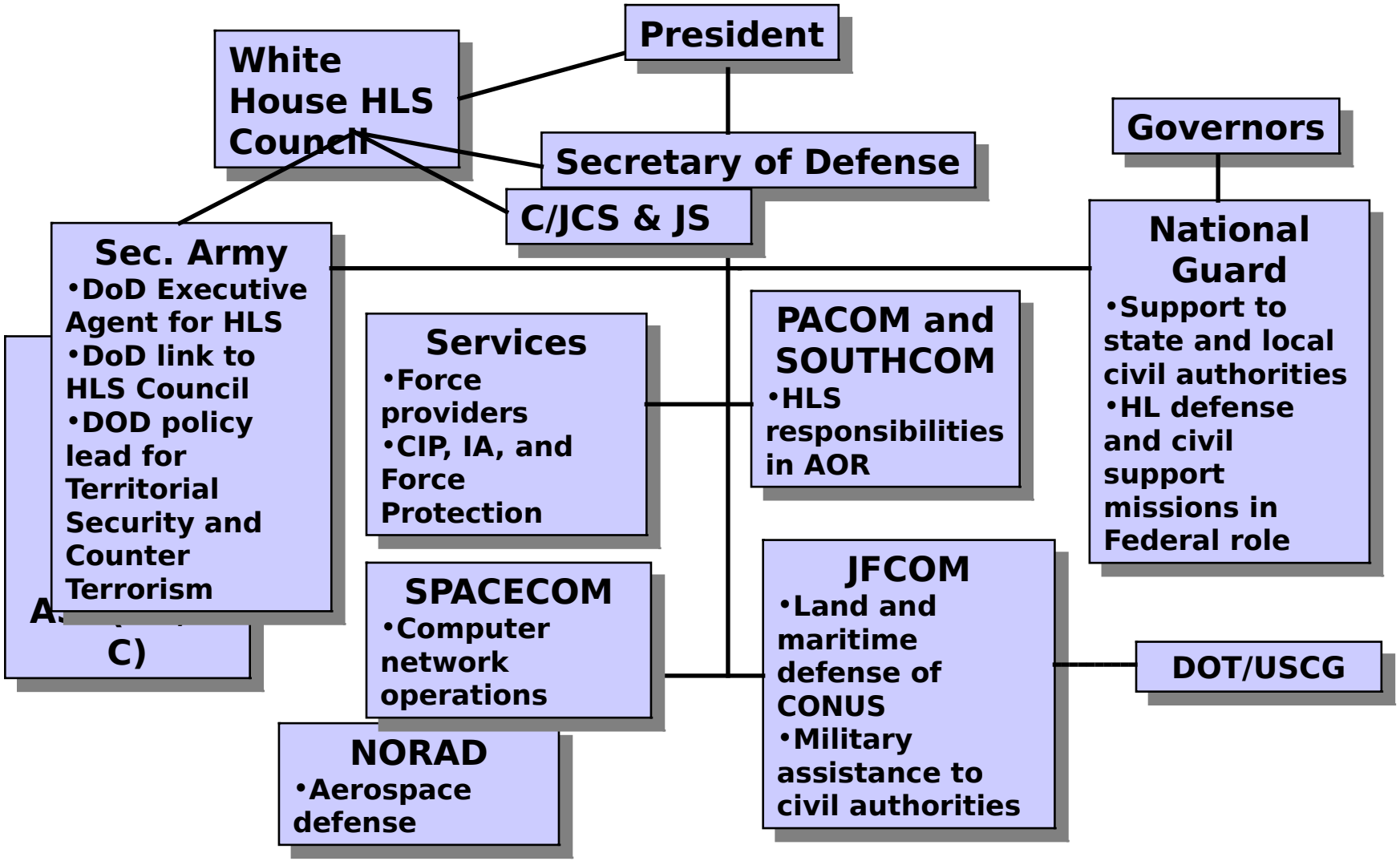
# DoD Responsibilities for HLS



# HLS Information Sharing

- **The problem**
  - Homeland security requires unprecedented cooperation among agencies, and across all levels of government
  - Senior policy makers must see the whole HLS picture to understand options and make decisions, and must have effective command and control systems to implement those decisions
  - Decision makers at every level (down to local first responders) must have a shared view of the situation, and must be able to communicate up, down, and laterally
- **Solution: Agencies must routinely share, rather than hoard, information. This means:**
  - new attitudes regarding the nature and utility of information
  - overcoming cultural, procedural, and legal obstacles
  - effective information sharing architectures
  - flexible, deployable command and control systems that reach from the White House to the first responders

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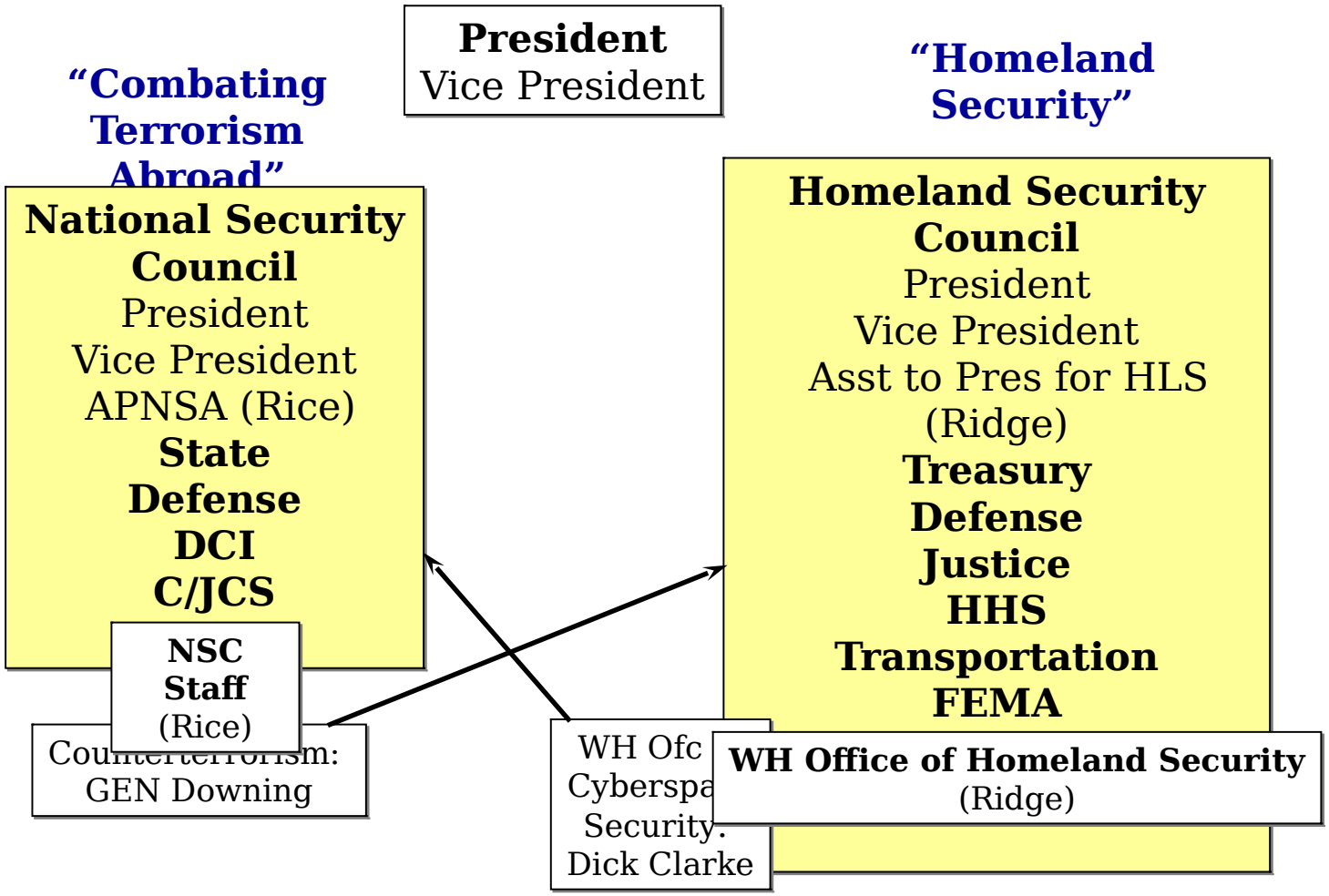
# Administration Organization for Fighting Terrorism and Securing the Homeland



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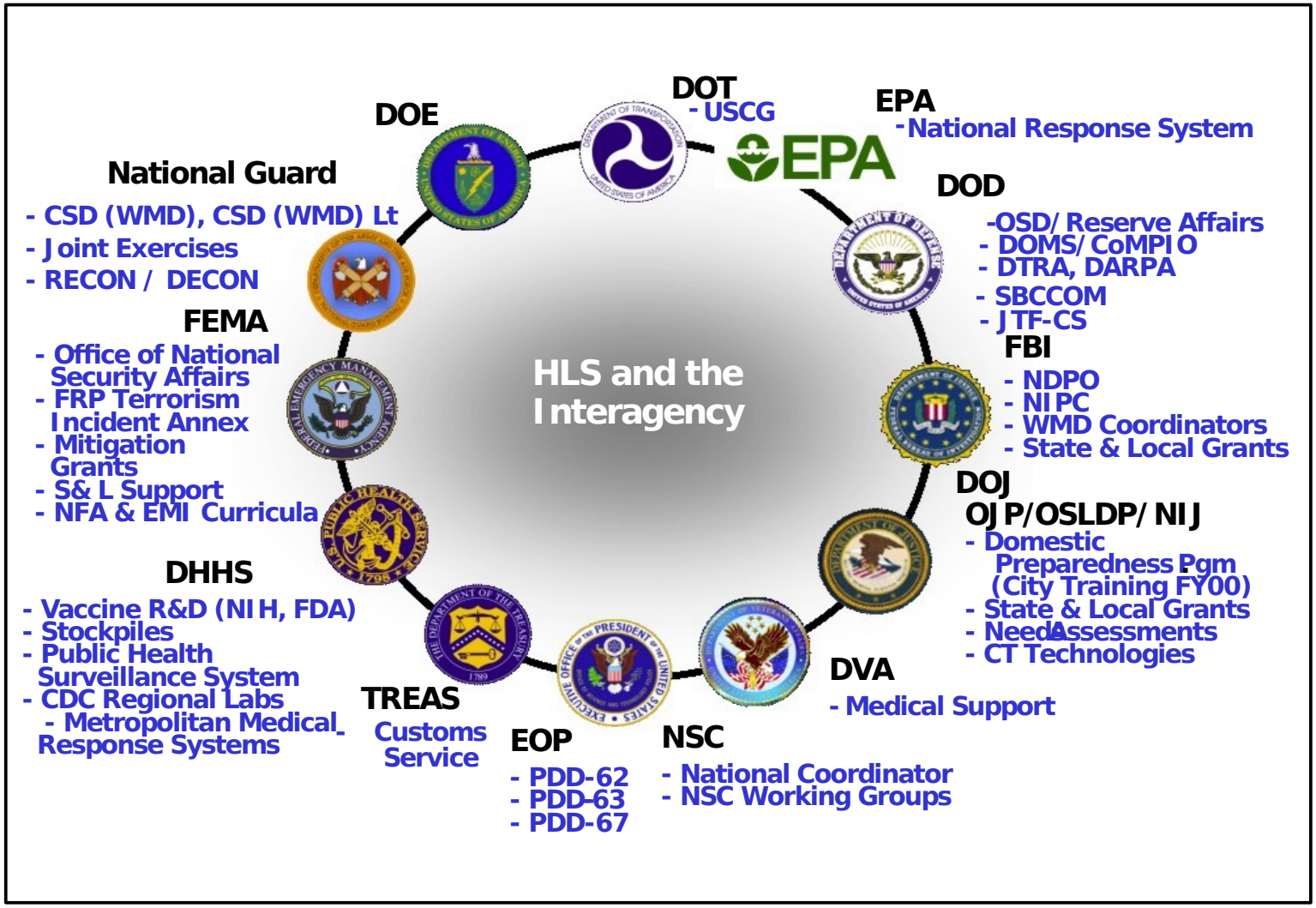
# Homeland Security will involve a wide variety of actors